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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/405,848	09/27/1999	TOSHIO NORITA	48864-021	9972
20277 7590 06/05/2007 MCDERMOTT WILL & EMERY LLP 600 13TH STREET, N.W. WASHINGTON, DC 20005-3096			EXAMINER AGGARWAL, YOGESH K	
			ART UNIT 2622	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

09/405,848

Applicant(s)

NORITA ET AL.

Examiner

Yogesh K. Aggarwal

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-15 and 24-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15 is/are allowed.
- 6) ☒ Claim(s) 11-14 and 24-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Arguments

1. Applicant's arguments filed 02/28/2007 have been fully considered but they are not persuasive.

Examiner's response:

2. Applicant argues with regards to claim 1 that Nagasaki does not teach the claimed limitation "controlling the electric charge accumulation time of said plurality of light-receiving elements such that a plurality of types of outputs with different electric charge accumulation times are produced by each of said light-receiving elements". The Examiner respectfully disagrees. Nagasaki teaches the output PE generates different accumulation times t_s , $2t_s$, $3t_s$, $4t_s$ etc as shown in figure 20 from the nondestructive element 71 corresponding to plurality of types of outputs with different accumulation times. Therefore a plurality of outputs (with different accumulation times t_s , $2t_s$, $3t_s$, $4t_s$) are generated by each of said light-receiving elements. Even in the applicant's specification, figures 34C and 34D, an intended pixel signal g_2 generates a plurality of outputs corresponding to charge accumulation times of T and $T/4$. This is equivalent to Nagasaki where a peak signal PE generates plurality of outputs with different accumulation times t_s , $2t_s$, $3t_s$, $4t_s$ etc as shown in figure 20 from the nondestructive element 71. Finally, Nagasaki also teaches at col. 16 lines 40-col. 17 line 22, figures 19 and 20 that when the peak level signal PK exceeds the threshold the image pick up element is reset i.e. it remains in the non-saturation mode.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 11 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Nagasaki et al. (US Patent # 5,083,150).

[Claim 11]

Applicant's own admitted prior art teaches a three-dimensional input apparatus comprising a projector for irradiating a detection light beam on an object (Page 1 lines 26-30), a scanning mechanism for scanning said object by deflecting the direction of irradiation of said detection light beam (Page 2 lines 1-19), an image sensing device with an image sensing surface including a plurality of two-dimensionally arranged light-receiving elements, for receiving the detection light beam reflected on said object (Page 3 lines 15-18).

Applicant's admitted prior art fails to teach a controller for controlling the electric charge accumulation time of plurality of said light-receiving elements such that a plurality of types of outputs with different electric charge accumulation times are produced by each of said light receiving elements, discriminating whether at least one of said plurality of types of output signals is saturated for each one of the two-dimensionally arranged light-receiving elements and selecting said non-saturated signals among said plurality of types of output signals for each one of the plurality of two-dimensionally arranged light-receiving elements based on the result of the discrimination.

However Nagasaki et al. teaches a microprocessor 18 for controlling the electric charge accumulation time of plurality of said light-receiving elements such that a plurality of types of outputs with different electric charge accumulation times are produced by each of said light

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receiving elements (e.g. different accumulation times t_s , $2t_s$, $3t_s$, $4t_s$ etc as shown in figure 20),

discriminating whether at least one of said plurality of types of output signals is saturated for each one of the two-dimensionally arranged light-receiving elements (col. 16 lines 34-39, teach that when the object is exposed for a unit accumulation time t_s , it is saturated)

and selecting said non-saturated signals among said plurality of types of output signals for each one of the plurality of two-dimensionally arranged light-receiving elements based on the result of the discrimination (col. 16 lines 40-col. 17 line 22, figures 19 and 20 teach that when the peak level signal PK exceeds the threshold the image pick up element is reset i.e. it remains in the non-saturation mode).

Therefore taking the combined teachings of Applicant's admitted prior art and Nagasaki, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have a controller for controlling the electric charge accumulation time of plurality of said light-receiving elements such that a plurality of types of outputs with different electric charge accumulation times are produced by each of said light receiving elements, discriminating whether at least one of said plurality of types of output signals is saturated for each one of the two-dimensionally arranged light-receiving elements and selecting said non-saturated signals among said plurality of types of output signals for each one of the plurality of two-dimensionally arranged light-receiving elements based on the result of the discrimination in order to prevent the saturation of the nondestructive element 71 and degradation of the image signal and high-precision focus adjustment can be performed regardless of luminance levels of the objects.

[Claim 24]

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This is a method claim corresponding to apparatus claim 11. Therefore it has been analyzed and rejected based upon the apparatus claim 11.

5. Claims 12 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Nagasaki et al. (US Patent # 5,083,150) as applied to claim 11 above in further view of Kazama et al. (US Patent # 5,883,668).

[Claim 12]

Applicant's admitted prior art in view of Nagasaki fail to teach "wherein said controller controls said image sensing device so as to output a signal corresponding to the accumulated electric charge upon lapse of a first accumulation time and continue to accumulate electric charge while maintaining said accumulated electric charge until a second charge accumulation time".

However Kazama et al. teaches a non-destructive readout technique in which there is a mix of pixels that were read before the update and pixels that were not read before the update which means the former pixels have underwent the reset operation and that the latter pixels have accumulated charge for a long period of time without undergoing the reset operation (col. 9 lines 23-37) and is read as outputting a signal corresponding to the accumulated electric charge upon lapse of a first accumulation time and continue to accumulate electric charge while maintaining said accumulated electric charge until a second charge accumulation time. Therefore taking the combined teachings of Applicant's admitted prior art, Nagasaki and Kazama, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have a controller that controls said image sensing device so as to output a signal corresponding to the accumulated electric charge upon lapse of a first accumulation time and continue to accumulate electric charge while maintaining said accumulated electric charge until a second charge

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accumulation time. The benefit of doing so would be so that a non-destructive readout operation can be performed in which only the pixels from which signals have been read are reset to drain accumulated charge as taught in Kazama (col. 9 lines 25-28).

[Claim 25]

This is a method claim corresponding to apparatus claim 12. Therefore it has been analyzed and rejected based upon the apparatus claim 12.

6. Claims 13 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art, Nagasaki et al. (US Patent # 5,083,150), Kazama et al. (US Patent # 5,883,668) as applied to claim 12 above in further view of Kusaka et al. (US Patent # 5,589,909).

[Claim 13]

Applicant's admitted prior art, Nagasaki and Kazama fail to teach, "wherein said controller selects among said non-saturated signals one having a long electric charge accumulation time". However Kusaka et al. teaches that if the intensity of the target object is low (read as non-saturated signals) then signals with long charge accumulation are selected (col. 10 lines 57-67). Therefore taking the combined teachings of Applicant's admitted prior art, Nagasaki Kazama and Kusaka, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have a controller that selects among said non-saturated signals one having a long electric charge accumulation time. The benefit of doing so would be so that conditions related to the intensity of light from the target object to be photographed can also be detected as taught in Kusaka (col. 10 lines 60-62).

[Claim 26]

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This is a method claim corresponding to apparatus claim 13. Therefore it has been analyzed and rejected based upon the apparatus claim 13.

7. Claims 14 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Nagasaki et al. (US Patent # 5,083,150) as applied to claim 11 above in further view of Kusaka et al. (US Patent # 5,589,909).

[Claim 14]

Applicant's admitted prior art in view of Nagasaki fail to teach, "wherein said controller selects among said non-saturated signals one having a long electric charge accumulation time".

However Kusaka et al. teaches that if the intensity of the target object is low (read as non-saturated signals) then signals with long charge accumulation are selected (col. 10 lines 57-67).

Therefore taking the combined teachings of Applicant's admitted prior art, Nagasaki and Kusaka, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have a controller that selects among said non-saturated signals one having a long electric charge accumulation time. The benefit of doing so would be so that conditions related to the intensity of light from the target object to be photographed can also be detected as taught in Kusaka (col. 10 lines 60-62).

[Claim 27]

This is a method claim corresponding to apparatus claim 14. Therefore it has been analyzed and rejected based upon the apparatus claim 11.

Allowable Subject Matter

8. Claim 15 is allowed.

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9. The following is a statement of reasons for the indication of allowable subject matter:

The prior art fails to suggest or teach a controller for controlling said image sensing device so as to output a first signal due to a first electric charge accumulation time and a second signal due to a second electric charge accumulation time equal to a predetermined multiple of said first signal during the electric charge accumulation of said image sensing device; and a selecting circuit for selecting said second signal in the case where said second signal has not been saturated and using selecting a signal of a size equal to said predetermined multiple of said first signal in the case where said second signal has been saturated; and a processor for performing calculations using the selected signal, said selecting circuit including: a first switch, a second switch, a memory, a comparator and an integrator wherein said first switch receives the first and second signals outputs the first signal to the memory and outputs the second signal to the second switch and to the comparator, the integrator receives the first signal from the memory and outputs the signal of a size equal to said predetermined multiple of said first signal to the second switch, and the comparator compares the second signal to a reference saturation level and outputs a control signal to the second switch to output the second signal where the second signal has not been saturated and to output the signal of a size equal to said predetermined multiple where the second signal has been saturated.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yogesh K. Aggarwal whose telephone number is (571) 272-7360. The examiner can normally be reached on M-F 9:00AM-5:30PM.

11. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivek Srivastava can be reached on (571)-272-7304. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

12. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

YKA

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May 18, 2007

A handwritten signature in black ink, consisting of stylized, overlapping loops and lines, positioned above a horizontal line.

VIVEK SRIVASTAVA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600